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CLAIMS

(92)

1. A composition of a ketone peroxide comprising
 - a) a peroxide derivative of the formula
 $\text{HOO-C(R}_1\text{)(R}_2\text{)-OOH}$
wherein
 R_1 is a branched or unbranched alkyl group with 1 to 4 carbon atoms or alkenyl group with 2 to 4 carbon atoms; and
 R_2 is a branched or unbranched alkyl or alkenyl group with 5 to 12 carbon atoms; and
 - b) a branched or unbranched hydrocarbon solvent;
the peroxide derivative of a) having a solubility more than 40 g in 100 g of the solvent of b) at 20°C; and
comprises less than 10 wt.% of a peroxide derivative of the formula
 $\text{HOO-C(R}_1\text{)(R}_2\text{)-OO-C(R}_1\text{)(R}_2\text{)-OOH}$,
wherein R_1 and R_2 have the previously given meanings.
2. The composition of claim 1 wherein R_1 and R_2 are alkyl groups.
3. The composition of claim 2 wherein R_1 is a methyl group and R_2 is an isoamyl or amyl group.
4. The composition of any one of claims 1-3 wherein the solvent is a saturated aliphatic hydrocarbon.
5. A composition of a ketone peroxide derived bis-peroxyester, bis-peroxycarbonate, or mixed peroxyester-peroxycarbonate comprising
 - a) a ketone peroxide derived bis-peroxyester, bis-peroxycarbonate, or mixed peroxyester-peroxycarbonate derivative of the formula
 $\text{R}_3[\text{O}]_n\text{C(O)OO-C(R}_1\text{)(R}_2\text{)-OOC(O)[O]}_n\text{R}_3$
wherein
 R_1 is a branched or unbranched alkyl group with 1 to 4 carbon atoms or alkenyl group with 2 to 4 carbon atoms; and
 R_2 is a branched or unbranched alkyl or alkenyl group with 5 to 12

carbon atoms; and

R_3 is independently selected from a branched or unbranched alkyl group with 1 to 12 carbon atoms, alkenyl group with 2 to 12 carbon atoms; and an aromatic group with 6-12 carbon atoms,

n is independently 0 or 1, and

- b) a branched or unbranched hydrocarbon solvent;
and

comprising less than 10 wt.% of a peroxide derivative of the formula

$R_3[O]_n C(O)OO-C(R_1)(R_2)-OO-C(R_1)(R_2)-OOC(O)[O]_n R_3$,

wherein R_1 , R_2 , R_3 , and n have the previously given meanings.

6. A composition of a ketone peroxide derived monoperoxyester or monoperoxycarbonate comprising

- a) a ketone peroxide derived monoperoxyester or monoperoxycarbonate derivative of the formula

$HOO-C(R_1)(R_2)-OOC(O)[O]_n R_3$

wherein

R_1 is a branched or unbranched alkyl group with 1 to 4 carbon atoms or alkenyl group with 2 to 4 carbon atoms; and

R_2 is a branched or unbranched alkyl or alkenyl group with 5 to 12 carbon atoms; and

R_3 is selected from a branched or unbranched alkyl group with 1 to 12 carbon atoms, alkenyl with 2 to 12 carbon atoms; and an aromatic group with 6-12 carbon atoms;

n is 0 or 1, and

- b) a branched or unbranched hydrocarbon solvent;
and

comprising less than 10 wt.% of a peroxide derivative of the formula

$HOO-C(R_1)(R_2)-OO-C(R_1)(R_2)-OOC(O)[O]_n R_3$,

wherein R_1 , R_2 , R_3 , and n have the previously given meanings.

7. A process for the preparation of a composition of any one of the claims 1-4 comprising the step wherein a ketone of the formula $O=C(R_1)(R_2)$, wherein R_1 and R_2 have the previously given meanings, is reacted with hydrogen peroxide

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in the branched or unbranched hydrocarbon solvent in the presence of an acidic catalyst.

8. Use of the composition of any one of claims 1-6 for polymerizing vinylchloride, (meth)acrylic monomers, styrene, ethylene, or mixtures thereof, for curing unsaturated polyester or vinylester resins, for grafting monomers onto a polymer, for crosslinking a polymer or for degrading a polymer.

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